



# UNITED STATES PATENT AND TRADEMARK OFFICE

*cen*

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,000	08/18/2006	Alexander Apolonski	P/1903-28	5129
2352	7590	10/10/2007	EXAMINER	
OSTROLENK FABER GERB & SOFFEN			HAGAN, SEAN P	
1180 AVENUE OF THE AMERICAS			ART UNIT	
NEW YORK, NY 100368403			PAPER NUMBER	
			2828	
			MAIL DATE	
			DELIVERY MODE	
			10/10/2007	
			PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/579,000

Applicant(s)

APOLONSKI ET AL.

Examiner

Sean Hagan

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 11 May 2006, 3/19/07
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1 through 11 originally filed 11 May 2006. Claims 1 through 11 amended by amendment received 11 May 2006. Claims 1 through 11 are pending in this application.

### ***Drawings***

2. Figure 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

3. Claim 11 objected to because of the following informalities: a claim must end in a period. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2828

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 3, 4, 5, 6, 7, 9, 10, and 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Cho et al. ("Generation of 90-nJ pulses with a 4-MHz repetition-rate Kerr-lens mode-locked Ti:Al<sub>2</sub>O<sub>3</sub> laser operating with net positive and negative intracavity dispersion," Opt. Lett. 26, 560-562 (2001), hereafter Cho) in view of Szipocs et al. (Szipocs, US Patent 5,734,503).

6. Cho and Szipocs were part of the IDS filed 11 May 2006.

7. **Regarding claim 1**, Cho discloses, "A resonator containing a laser crystal as well as several mirrors" (Fig. 1). "One of which forms a pump beam coupling-in mirror and one of which forms a laser beam out-coupling mirror" (Fig. 1). "A multiple reflexion telescope enlarging the resonator length" (Fig. 1). "The resonator in operation having a positive averaged dispersion over a wavelength range concerned" (pg. 561, col. 2, starting "Using positive dispersion mode locking..."). Cho does not disclose, "Wherein the adjustment of the positive averaged dispersion of the resonator is effected by means of the mirrors of the resonator." "At least a few of which are designed as dispersive mirrors." Szipocs discloses, "Wherein the adjustment of the positive averaged dispersion of the resonator is effected by means of the mirrors of the resonator" (col. 2, lines 32-46). "At least a few of which are designed as dispersive mirrors" (col. 3, lines 51-65). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Cho with the teachings of

Art Unit: 2828

Szipocs. The use of dispersive mirrors as disclosed by Szipocs would enhance the teachings of Cho by introducing more stable dispersive elements (Szipocs, col. 3, lines 51-65).

8. **Regarding claim 2**, the combination of Cho and Szipocs does not disclose, "Wherein the dispersion of the resonator averaged over the wavelength range concerned is adjusted in a range of between 0 and 100 fs<sup>2</sup>." It would have been obvious to one of ordinary skill in the art at the time of invention to set dispersion between 0 and +100 fs<sup>2</sup>, since it has been held that where the general conditions for a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

9. **Regarding claim 3**, the combination of Cho and Szipocs does not disclose, "Wherein the averaged dispersion ranges between 0 and 50 fs<sup>2</sup>." It would have been obvious to one of ordinary skill in the art at the time of invention to set dispersion between 0 and +50 fs<sup>2</sup>, since it has been held that where the general conditions for a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

10. **Regarding claim 4**, Cho does not disclose, "Wherein all the mirrors of the resonator are dispersive mirrors." Szipocs discloses, "Wherein all the mirrors of the resonator are dispersive mirrors" (col. 3, lines 51-65). It would have been obvious to

Art Unit: 2828

one of ordinary skill in the art at the time of invention to combine the teachings of Cho with the teachings of Szipocs for the reasons given above regarding claim 1.

11. **Regarding claim 5**, Cho does not disclose, "Wherein all the mirrors of the resonator have a negative dispersion." Szipocs discloses, "Wherein all the mirrors of the resonator have a negative dispersion" (col. 3, lines 51-65). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Cho with the teachings of Szipocs for the reasons given above regarding claim 1.

12. **Regarding claim 6**, Cho does not disclose, "Wherein the mirrors of the multiple-reflexion telescope are dispersive mirrors." Szipocs discloses, "Wherein the mirrors of the multiple-reflexion telescope are dispersive mirrors" (col. 3, lines 51-65). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Cho with the teachings of Szipocs for the reasons given above regarding claim 1.

13. **Regarding claim 7**, Cho does not disclose, "Wherein the mirrors of the telescope have a negative dispersion." Szipocs discloses, "Wherein the mirrors of the telescope have a negative dispersion" (col. 3, lines 51-65). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Cho with the teachings of Szipocs for the reasons given above regarding claim 1.

14. **Regarding claim 9**, Cho discloses, "Wherein the Kerr-lens mode-locking principle is used for passive mode-locking" (pg. 560, col. 1, starting "In this Letter...").

15. **Regarding claim 10**, Cho discloses, "Wherein a saturable absorber is provided for passive mode-locking" (pg. 560, col. 1, starting "In this Letter...").

16. **Regarding claim 11**, the combination of Cho and Szipocs does not disclose, "Use of a short pulse laser arrangement according to claim 1 for material processing." A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

17. Claim 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Cho in view of Szipocs and further in view of Cunningham et al. (Cunningham, US Patent 5,701,327).

18. **Regarding claim 8**, the combination of Cho and Szipocs does not disclose, "Wherein for an additional dispersion fine adjustment, a pair of glass wedges with positive dispersion is arranged in the resonator." Cunningham discloses, "Wherein for an additional dispersion fine adjustment, a pair of glass wedges with positive dispersion

Art Unit: 2828

is arranged in the resonator" (col. 6, lines 42-44). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of the combination of Cho and Szipocs with the teachings of Cunningham. Inclusion of wedges for fine tuning pulse characteristics as taught by Cunningham would enhance the teachings of Cho and Szipocs by allowing for introduction of minute alterations of dispersion should such alterations present themselves as necessary.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean Hagan whose telephone number is 571-270-1242. The examiner can normally be reached on Monday-Friday 7:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun O. Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 2828

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SH

